

Name _____

Nature of An Atom

What we know about the features of the atom has developed over hundreds of years. Because an atom is not visible to the natural eye, simulations have been created to help understand these features of the atom. You will use the “Build an Atom” PhET simulation to investigate how the different parts of an atom work.

- 1) Go to <http://phet.colorado.edu/en/simulation/build-an-atom> and click on “Run Now!”
(This simulation uses Java so make sure are using a computer that has Java installed on it).
- 2) Explore the different aspects of the simulation and then answer the following questions:
 - (a) What are the three basic components of an atom and where are they located? Include a picture with each component labeled.
 - (b) What is the different between a stable and unstable nucleus? Which one is favored in nature?
 - (c) What component (or components) determines the name of the element? Give an example.
 - (d) An atom can have different charges. What makes an atom: neutral (one with 0 extra charge), a +ion (positive ion, one with extra positive charge), and a –ion (negative ion, one with extra negative charge)?

(e) Each atom has a mass associated with it. What components are responsible for determining the mass of an atom?

(f) All of the different features of an atom (its element, charge and mass) are linked to the components that make it up. In the following situations, which of these three features changes and how does it change:

(i) add a proton

(ii) remove a neutron

(iii) remove an electron

*Adapted from “Build an Atom: Introduction” by P. Loeblein & K. Perkins (Build an Atom, phet.colorado.edu)